

WHAT IS CLAIMED IS:

1. A signal transmission method over a forward traffic channel in cellular mobile communications that can simultaneously perform multiple communications between a plurality of mobile stations and a base station at different transmission rates, said signal transmission method comprising the steps of:

10 detecting, on a base station side, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate; and

rejecting the communication request for the high speed communication, if a total number of high speed communications transmitted simultaneously exceeds a predetermined fixed value when the detected communication request for the high speed communication is added.

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2. A signal transmission method over a forward traffic channel in cellular mobile communications that can simultaneously perform multiple communications between a plurality of mobile stations and a base station at different

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transmission rates, said signal transmission method comprising the steps of:

detecting, on a base station side, whether a communication request is made for a high speed
5 communication with a transmission rate higher than a predetermined rate; and

accepting the communication request for the high speed communication if a total number of communications transmitted simultaneously is less
10 than or equal to a predetermined fixed value when the detected communication request for the high speed communication is added, temporarily holding the communication request for an allowable time period if the total number is greater than the fixed
15 value, and accepting the communication request after waiting until the total number of the communications becomes less than or equal to the fixed value.

3. A signal transmission method over a forward
20 traffic channel in cellular mobile communications that simultaneously perform multiple communications between a plurality of mobile stations and a base station at different transmission rates, said signal transmission method comprising the steps of:

25 detecting, on a base station side, whether a communication request is made for a high speed

communication with a transmission rate higher than a predetermined rate;

accepting the communication request for the high speed communication if a total number of
5 communications transmitted simultaneously is less than or equal to a predetermined first threshold value when the detected communication request for the high speed communication is added;

accepting the communication request with
10 limiting a transmission rate of the requested communication if the total number of the communications is greater than the first threshold value and is less than or equal to a predetermined second threshold value, and transmitting the
15 accepted high speed communication at the limited transmission rate; and

rejecting the communication request when the total number of the communications is greater than the second threshold value.

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4. A signal transmission method over a forward traffic channel in cellular mobile communications that simultaneously perform multiple communications between a plurality of mobile stations and a base
25 station at different transmission rates, said signal transmission method comprising the steps of:

detecting, on a base station side, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

5 accepting the communication request for the high speed communication if a total number of communications transmitted simultaneously is less than or equal to a predetermined first threshold value when the detected communication request for
10 the high speed communication is added;

 accepting the communication request with limiting a transmission rate of the requested communication if the total number of the
15 communications is greater than the first threshold value and is less than or equal to a predetermined second threshold value, and transmitting the accepted high speed communication at the limited transmission rate; and

 temporarily holding the communication request
20 for a time period if the total number is greater than the second threshold value, and accepting the communication request after waiting until the total number of the communications becomes less than or equal to the threshold value.

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5. A signal transmission method over a forward traffic channel in CDMA cellular mobile communications that can simultaneously perform multiple communications between a plurality of mobile stations and a base station at different transmission rates, said signal transmission method comprising the steps of:

detecting, on a base station side, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate; and

rejecting the communication request for the high speed communication, if transmission power of all high speed communications transmitted simultaneously, or transmission power of all communications transmitted simultaneously exceeds a predetermined fixed value when the detected communication request for the high speed communication is added.

6. A signal transmission method over a forward traffic channel in CDMA cellular mobile communications that can simultaneously perform multiple communications between a plurality of mobile stations and a base station at different

transmission rates, said signal transmission method comprising the steps of:

detecting, on a base station side, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate; and

accepting the communication request for the high speed communication if transmission power of all high speed communications transmitted simultaneously or transmission power of all communications transmitted simultaneously is less than or equal to a predetermined fixed value when the detected communication request for the high speed communication is added, temporarily holding the communication request for an allowable time period if the transmission powers are greater than the fixed value, and accepting the communication request after waiting until the transmission power of all high speed communications transmitted simultaneously or the transmission power of all communications transmitted simultaneously becomes less than or equal to the fixed value.

7. A signal transmission method over a forward traffic channel in CDMA cellular mobile communications that can simultaneously perform

multiple communications between a plurality of mobile stations and a base station at different transmission rates, said signal transmission method comprising the steps of:

5 detecting, on a base station side, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

10 accepting the communication request for the high speed communication if transmission power of all high speed communications transmitted simultaneously or transmission power of all communications transmitted simultaneously is less than or equal to a predetermined first threshold value when the
15 detected communication request for the high speed communication is added;

20 accepting the communication request with limiting a transmission rate of the requested communication if the transmission power of all the high speed communications or the transmission power of all the communications is greater than the first threshold value and is less than or equal to a predetermined second threshold value, and
25 transmitting the accepted high speed communication at the limited transmission rate; and

rejecting the communication request when the transmission power of all the high speed communications or the transmission power of all the communications is greater than the second threshold value.

8. A signal transmission method over a forward traffic channel in CDMA cellular mobile communications that simultaneously perform multiple communications between a plurality of mobile stations and a base station at different transmission rates, said signal transmission method comprising the steps of:

detecting, on a base station side, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

accepting the communication request for the high speed communication if transmission power of all high speed communications transmitted simultaneously or transmission power of all communications transmitted simultaneously is less than or equal to a predetermined first threshold value when the detected communication request for the high speed communication is added;

accepting the communication request with limiting a transmission rate of the requested communication if the transmission power of all the high speed communications or the transmission power of all the communications is less than or equal to a predetermined second threshold value, and transmitting the accepted high speed communication at the limited transmission rate; and

temporarily holding the communication request
10 for a time period if the transmission power of all
the high speed communications or the transmission
power of all the communications is greater than the
second threshold value, and accepting the
communication request after waiting until the
15 transmission power of all the high speed
communications or the transmission power of all the
communications becomes less than or equal to the
threshold value.

20 9. The signal transmission method as claimed in claim 1, 2, 5 or 6, further comprising the step of varying the fixed value in accordance with a number of low speed communications with a transmission rate less than the predetermined rate.

10. The signal transmission method as claimed in claim 3, 4, 7 or 8, further comprising the step of varying the first threshold value and/or second threshold value in accordance with a number of low speed communications with a transmission rate less than the predetermined rate.

11. The signal transmission method as claimed in any one of claims 1-10, further comprising the step of carrying out channel assignment of a combination of channels whose forward channel transmission rate is higher than a reverse channel transmission rate.

12. A base station that simultaneously performs multiple communications with a plurality of mobile stations at different transmission rates, said base station comprising:

a high speed communication detector for detecting, when receiving a communication request, whether the communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

a threshold detector for detecting, in response to detection of the high speed communication by said high speed communication detector, whether a total number of high speed communications transmitted

simultaneously exceeds a predetermined fixed value
if the detected high speed communication is added;
and

a controller for controlling reception of the
5 high speed communication request in response to
detection by said threshold detector,

wherein said controller rejects the high speed
communication request if the total number of the
high speed communications transmitted simultaneously
10 exceeds the predetermined fixed value.

13. A base station that simultaneously performs
multiple communications with a plurality of mobile
stations at different transmission rates, said base
15 station comprising:

a high speed communication detector for
detecting, when receiving a communication request,
whether a communication request is made for a high
speed communication with a transmission rate higher
20 than a predetermined rate;

a detector for detecting, in response to
detection of the high speed communication by said
high speed communication detector, whether a total
number of high speed communications transmitted
25 simultaneously exceeds a predetermined fixed value
if the detected high speed communication is added;

a holder for temporarily holding the communication request for an allowable time period in response to detection by said detector that its detection result is greater than the fixed value;

5 and

a controller for controlling reception of the high speed communication request in response to said detector and said holder,

10 wherein said controller accepts, when the total number of the high speed communications transmitted simultaneously exceeds the predetermined fixed value, the high speed communication request after waiting within an allowable time period until the total number of the high speed communications
15 becomes less than or equal to the fixed value.

14. A base station that simultaneously performs multiple communications with a plurality of mobile stations at different transmission rates, said base
20 station comprising:

a high speed communication detector for detecting, when receiving a communication request, whether a communication request is made for a high speed communication with a transmission rate higher
25 than a predetermined rate;

a first threshold detector for detecting, in response to detection of the high speed communication by said high speed communication detector, whether a total number of high speed communications transmitted simultaneously exceeds a predetermined first threshold value if the detected communication request for the high speed communication is added;

a second threshold detector for detecting, in response to detection by said first threshold detector that the total number is greater than the first threshold value, whether the total number is equal to or less than a predetermined second threshold value; and

15 a controller for controlling reception of the
high speed communication request in response to said
first threshold detector and said second threshold
detector,

wherein said controller immediately accepts the
20 communication request when the total number of the
high speed communications transmitted simultaneously
is equal to or less than the predetermined first
threshold value.

accepts the communication request with limiting
25 a transmission rate of the requested communication
if the total number of the high speed communications

is greater than the first threshold value and is less than or equal to the predetermined second threshold value, and

rejects the communication request when the total
5 number of the high speed communications transmitted simultaneously is greater than the second threshold value.

15. A base station that simultaneously performs
10 multiple communications with a plurality of mobile stations at different transmission rates, said base station comprising:

a high speed communication detector for detecting, when receiving a communication request,
15 whether the communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

a first threshold detector for detecting, in response to detection of the high speed
20 communication by said high speed communication detector, whether a total number of high speed communications transmitted simultaneously exceeds a predetermined first threshold value if the detected communication request for the high speed
25 communication is added;

a second threshold detector for detecting, in response to detection by said first threshold detector that the total number is greater than the first threshold value, whether the total number is equal to or less than a predetermined second threshold value;

a holder for temporarily holding the high speed communication request for an allowable time period in response to detection by said second threshold detector that its detection result is greater than the second threshold value; and

a controller for controlling reception of the high speed communication request in response to said first threshold detector, said second threshold
15 detector and said holder,

wherein said controller immediately accepts the communication request when the total number of the high speed communications transmitted simultaneously is equal to or less than the predetermined first threshold value,

accepts the communication request with limiting a transmission rate of the requested communication if the total number of the high speed communications is greater than the first threshold value and is less than or equal to the predetermined second threshold value, and

holds, in response to detection by said second threshold detector that the total number exceeds the second threshold value, the high speed communication request for an allowable time period, and waits
5 until the total number of the high speed communications becomes less than or equal to the second threshold value.

16. A base station that simultaneously performs
10 multiple CDMA communications with a plurality of mobile stations at different transmission rates, said base station comprising:

a high speed communication detector for detecting, when receiving a communication request,
15 whether the communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

a detector for detecting, in response to detection of the high speed communication by said
20 high speed communication detector, whether transmission power of all high speed communications transmitted simultaneously or transmission power of all communications transmitted simultaneously exceeds a predetermined fixed value if the detected
25 high speed communication is added; and

a controller for controlling reception of the high speed communication request in response to detection by said threshold detector,

wherein said controller rejects the high speed communication request if the transmission power of all high speed communications transmitted simultaneously or transmission power of all communications transmitted simultaneously exceeds the predetermined fixed value.

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17. A base station that simultaneously performs multiple CDMA communications with a plurality of mobile stations at different transmission rates, said base station comprising:

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a high speed communication detector for detecting, when receiving a communication request, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

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a detector for detecting, in response to detection of the high speed communication by said high speed communication detector, whether transmission power of all high speed communications transmitted simultaneously or transmission power of all communications transmitted simultaneously

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exceeds a predetermined fixed value if the detected high speed communication is added;

a holder for temporarily holding the communication request for an allowable time period
5 in response to detection by said detector that its detection result is greater than the fixed value;
and

a controller for controlling reception of the high speed communication request in response to said
10 detector and said holder,

wherein said controller accepts the communication request when the transmission power of all the high speed communications transmitted simultaneously or the transmission power of all the
15 communications transmitted simultaneously is equal to or less than the predetermined fixed value if the high speed communication is added, holds the communication request for an allowable time period when the transmission power exceeds the fixed value,
20 and accepts the communication request after waiting within an allowable time period until the transmission power of all the high speed communications transmitted simultaneously or the transmission power of all the communications
25 transmitted simultaneously becomes less than or equal to the fixed value.

18. A base station that simultaneously performs multiple communications with a plurality of mobile stations at different transmission rates, said base station comprising:

a high speed communication detector for detecting, when receiving a communication request, whether a communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

a first threshold detector for detecting, in response to detection of the high speed communication by said high speed communication detector, whether transmission power of all high speed communications transmitted simultaneously or transmission power of all communications transmitted simultaneously exceeds a predetermined first threshold value if the detected communication request for the high speed communication is added;

a second threshold detector for detecting, in response to said first threshold detector, whether the transmission power of all the high speed communications transmitted simultaneously or the transmission power of all the communications transmitted simultaneously exceeds a predetermined

second threshold value if the requested communication is added; and

a controller for controlling reception of the high speed communication request in response to said
5 first threshold detector and said second threshold detector,

wherein said controller accepts the communication request when the transmission power of all the high speed communications transmitted
10 simultaneously or the transmission power of all communications transmitted simultaneously is equal to or less than the predetermined first threshold value,

accepts the communication request with limiting
15 a transmission rate of the requested communication if the transmission power of all the high speed communications or the transmission power of all the communications is greater than the first threshold value and is less than or equal to the predetermined
20 second threshold value, and

rejects the communication request when the transmission power of all the high speed communications or the transmission power of all the communications is greater than the second threshold
25 value.

19. A base station that simultaneously performs multiple CDMA communications with a plurality of mobile stations at different transmission rates, said base station comprising:

5 a high speed communication detector for detecting, when receiving a communication request, whether the communication request is made for a high speed communication with a transmission rate higher than a predetermined rate;

10 a first threshold detector for detecting, in response to detection of the high speed communication by said high speed communication detector, whether transmission power of all high speed communications transmitted simultaneously or
15 transmission power of all communications transmitted simultaneously exceeds a predetermined first threshold value if the detected communication request for the high speed communication is added;

20 a second threshold detector for detecting, in response to said first threshold detector, whether the transmission power of all the high speed communications transmitted simultaneously or the transmission power of all the communications transmitted simultaneously exceeds a predetermined
25 second threshold value if the requested communication is added;

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a holder for temporarily holding the communication request for an allowable time period in response to said second threshold detector; and

5 a controller for controlling reception of the high speed communication request in response to said first threshold detector, said second threshold detector and said holder,

10 wherein said controller accepts the communication request when the transmission power of all the high speed communications transmitted simultaneously or the transmission power of all the communications transmitted simultaneously is equal to or less than the predetermined first threshold value if the requested high speed communication is
15 added,

accepts the communication request with limiting a transmission rate of the requested communication if the transmission power of all the high speed communications or the transmission power of all the
20 communications is greater than the first threshold value and is less than or equal to the predetermined second threshold value, and transmits the accepted high speed communication at the limited transmission rate,

25 temporarily holds the communication request when the transmission power of all the high speed

communications or the transmission power of all the
communications exceeds said second threshold value,
and transmits a signal after waiting within an
allowable time period until the transmission power
5 of all the high speed communications or the
transmission power of all the communications becomes
less than or equal to said second threshold value.

20. The base as claimed in claim 12, 13, 16 or 18,
10 further comprising means for varying the fixed value
in accordance with a number of low speed
communications with a transmission rate less than
the predetermined rate.

21. The signal transmission method as claimed in
claim 14, 15, 18 or 19, further comprising means for
varying the first threshold value and/or second
threshold value in accordance with a number of low
speed communications with a transmission rate less
20 than the predetermined rate.